The emergence of cognitive abilities. The contribution of neuropsychology to archaeology.

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CHAPTER 1

The emergence of cognitive abilities: The contribution of neuropsychology to archaeology: Foreword

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The cognitive abilities of the ancient hominins appear to have progressed relatively slowly, insofar as the material evidence that they left behind is concerned. In fact, their technical productions, which appeared more than 2.5 million years ago, improved very little for nearly the entire period (i.e., about 2 million years). In contrast, the evidence of nonutilitarian practices, such as the burial of the dead or the first graphic expressions, made their appearance much later, not before 100,000 years ago. In addition, the human fossils themselves indicate a gradual evolution of uniform growth of the brain size.

We can query about the emergence conditions of these material and "symbolic" productions and ask why only the human species could develop it. If we admit that they reflect a modification of cognitive skills, then it is advisable to wonder of what these capacities consist. We could thus question the capacities of anticipation of the handaxe toolmakers or the capacities of abstraction and symbolization of the first people who buried their dead.

We could also seek to understand the conditions that led to the installation of a variety of cognitive processes during evolution. Are the processes developed answers to the requests of a changing environment, or are they the result of an evolution of the neurophysiological organization of the brain? Were the processes simply a better use of anatomical and cerebral structures already installed at the beginnings of the hominization? It is also possible to consider a more active role of hominins in their own development and to query about the impact of their activity in the emergence of new cognitive abilities.

One can also ask whether there is something specific to the human species that could explain why the nearest relatives of the hominins, the apes, do not seem to have access to such cognitive aptitudes, at least not in such a developed and systematic manner. Are these differences the result of simply diverging processes in species with equivalent potentialities at the beginning? Are there neurophysiologic differences important enough to explain these differences in ability? Or is it the aptitude to transmit their knowledge to the following generations that would distinguish the human primates from the nonhuman primates?

All of these questions and many others deserve to be debated. This is why it seemed to us that it could be profitable to gather prehistorians and neuropsychologists, both interested in the question of the emergence and evolution of cognitive abilities, so that they could confront and share their points of view and their knowledge.

This book[1] presents the results of both empirical studies and theoretical speculations about the emergence and the evolution of modern thinking, with evidence coming from both archaeology and neuropsychology. We explore the cognitions required in the making of simple stone tools to more sophisticated production, such as symbolic thought or language. Traditionally, these two fields of study have shared little in the way of theories and methods, yet they both provide crucial pieces to the puzzle of modern human cognitive emergence and evolution.

Cognitive archaeology is a quickly growing discipline. Ironically, archaeologists have been slow to adopt current theories, models, and findings within contemporary cognitive science. This book will serve as an example of the contributions of both disciplines.

1 Some of these chapters were presented as papers at the Congress of the International Union for Prehistoric and Protohistoric Sciences (IUPPS) in Lisbon, Portugal, on September 7, 2006, at a colloquium organized by Sophie A. de Beaune.